What is claimed is:

1. Titanium or titanium alloy tableware having a surface hardened layer formed in an arbitrary depth from the surface,

wherein the surface hardened layer comprises a first hardened layer which is formed in the region of an arbitrary depth from the surface and in which nitrogen and oxygen are diffused so as to form a solid solution and a second hardened layer which is formed in an arbitrary region deeper than the first hardened layer.

2. The tableware as claimed in claim 1, wherein 0.6 to 8.0 % by weight of nitrogen and 1.0 to 14.0 % by weight of oxygen are diffused so as to form a solid solution in the first hardened layer and 0.5 to 14.0 % by weight of oxygen is diffused so as to form a solid solution in the second hardened layer.

3. The tableware as claimed in claim 1, wherein the first hardened layer is formed in the region of a given depth from the surface and the second hardened layer is formed in the region deeper than the first hardened layer and of an arbitrary depth from the surface.

4. A process for surface treatment of tableware, comprising:

a heating step wherein titanium or titanium alloy tableware is placed in a vacuum chamber and heated to anneal the tableware,

a hardening treatment step wherein a mixed gas containing nitrogen as a main component and an oxygen component is introduced into the vacuum chamber after the heating step, and the vacuum chamber is heated at a temperature of 700 to 800°C for a given period of time under given reduced pressure to diffuse nitrogen and oxygen inside the titanium or titanium alloy tableware from the surface so as to form a solid solution,

a cooling step wherein the titanium or titanium alloy tableware is cooled to room temperature after the hardening treatment step, and

a polishing step wherein the tableware is polished after the cooling step.

5. The process for surface treatment as claimed in claim 4, wherein in the heating step, the vacuum chamber is evacuated and heating is carried out under reduced pressure.

6. The process for surface treatment as claimed in claim 4, wherein in the heating step, the vacuum chamber is evacuated, then an inert gas is introduced into the vacuum chamber, and heating is carried out under reduced pressure.

7. The process for surface treatment as claimed in claim 4, wherein in the cooling step, the vacuum chamber is highly

evacuated to remove the mixed gas containing nitrogen as a main component and an oxygen component, and cooling is carried out under vacuum.

8. The process for surface treatment as claimed in claim 4, wherein in the cooling step, the vacuum chamber is highly evacuated to remove the mixed gas containing nitrogen as a main component and an oxygen component, then an inert gas is introduced into the vacuum chamber, and cooling is carried out under reduced pressure.

9. The process for surface treatment as claimed in claim 8, wherein the mixed gas containing nitrogen as a main component and an oxygen component is a mixed gas comprising a nitrogen gas containing an oxygen gas.

10. The process for surface treatment as claimed in claim 9, wherein the mixed gas containing nitrogen as a main component and an oxygen component is a mixed gas comprising a nitrogen gas containing a hydrogen gas.

11. The process for surface treatment as claimed in claim 4, wherein the mixed gas containing nitrogen as a main component and an oxygen component is a mixed gas comprising a nitrogen gas containing water vapor.

12. The process for surface treatment as claimed in claim 11, wherein the mixed gas containing nitrogen as a main component and an oxygen component is a mixed gas comprising a nitrogen gas containing a carbon dioxide gas or a carbon monoxide gas.

13. The process for surface treatment as claimed in claim 4, wherein the mixed gas containing nitrogen as a main component and an oxygen component is a mixed gas comprising a nitrogen gas containing an alcohol gas.

14. A process for surface treatment of tableware, comprising:

a heating step wherein titanium or titanium alloy tableware is placed in a vacuum chamber, the vacuum chamber is evacuated, then an inert gas is introduced into the vacuum chamber, and the tableware is heated under reduced pressure to anneal the tableware,

a hardening treatment step wherein the vacuum chamber is evacuated to remove the inert gas after the heating step, then a mixed gas containing nitrogen as a main component and an oxygen component is introduced into the vacuum chamber, the pressure in the vacuum chamber is adjusted to atmospheric pressure, and the vacuum chamber is heated at a temperature of 700 to 800°C for a given period of time to diffuse nitrogen and oxygen inside the titanium or titanium alloy tableware from the surface so as to form a solid solution,

a cooling step wherein the titanium or titanium alloy tableware is cooled to room temperature after the hardening treatment step, and

a polishing step wherein the tableware is polished after the cooling step.

15. The process for surface treatment as claimed in claim 14, wherein in the heating step, the vacuum chamber is evacuated and heating is carried out under reduced pressure.

16. The process for surface treatment as claimed in claim 14, wherein in the heating step, the vacuum chamber is evacuated, then an inert gas is introduced into the vacuum chamber to adjust the pressure to atmospheric pressure, and heating is carried out at atmospheric pressure.

17. The process for surface treatment as claimed in claim 14, wherein in the cooling step, the vacuum chamber is highly evacuated to remove the mixed gas containing nitrogen as a main component and an oxygen component, and cooling is carried out under vacuum.

18. The process for surface treatment as claimed in claim 14, wherein in the cooling step, the vacuum chamber is highly evacuated to remove the mixed gas containing nitrogen as a main component and an oxygen component, then an inert gas is introduced into the vacuum chamber to adjust the pressure to

atmospheric pressure, and cooling is carried out at atmospheric pressure.

19. The process for surface treatment as claimed in claim 14, wherein the mixed gas containing nitrogen as a main component and an oxygen component is a mixed gas comprising a nitrogen gas containing an oxygen gas.

20. The process for surface treatment as claimed in claim 14, wherein the mixed gas containing nitrogen as a main component and an oxygen component is a mixed gas comprising a nitrogen gas containing water vapor.

21. The tableware as claimed in any one of claims 1 to 3, wherein the first hardened layer is coated with a hard coating film.

22. The tableware as claimed in claim 21, wherein the hard coating film is a nitride, a carbide, an oxide, a nitrido-carbide or a nitrido-carbido-oxide of a 4a, 5a or 6a Group element of the periodic table.

23. The tableware as claimed in claim 21 or 22, wherein the hard coating film shows a gold color tone.

24. The tableware as claimed in claim 23, wherein the hard coating film is coated with a gold alloy coating film.

25. The tableware as claimed in claim 24, wherein the gold alloy coating film is made of an alloy of gold and at least one metal selected from Al, Si, V, Cr, Ti, Fe, Co, Ni, Cu, Zn, Ge, Y, Zr, Nb, Mo, Ru, Rh, Pd, Ag, Cd, In, Sn, Hf, Ta, W, Ir and Pt.

26. The tableware as claimed in any one of claims 1 to 3, wherein the surface of the first hardened layer has been polished.

27. A substrate having a hard decorative coating film on the surface, which comprises titanium or a titanium alloy and has an internal hardened layer comprising a first hardened layer that is formed in an arbitrary depth toward the inside from the surface, in said first hardened layer nitrogen and oxygen being diffused so as to form a solid solution, and a second hardened layer that is formed in an arbitrary depth toward the inside from the first hardened layer,

wherein the hard decorative coating film is formed on the surface of the internal hardened layer.

28. The substrate having a hard decorative coating film as claimed in claim 27, wherein in the internal hardened layer, 0.6 to 8.0 % by weight of nitrogen and 1.0 to 14.0 % by weight of oxygen are diffused so as to form a solid solution in the first hardened layer and 0.5 to 14.0 % by weight of oxygen

is diffused so as to form a solid solution in the seconded hardened layer.

29. The substrate having a hard decorative coating film as claimed in claim 27, wherein in the internal hardened layer formed in the substrate, the first hardened layer is formed in the region of 1.4 μm toward the inside from the surface and the second hardened layer is formed in the region deeper than the first hardened layer and of 20.4 μm toward the inside from the surface.

30. The substrate having a hard decorative coating film as claimed in claim 27, wherein the hard decorative coating film is made of a nitride, a carbide, an oxide, a nitrido-carbide or a nitrido-carbido-oxide of a 4a, 5a or 6a Group element of the periodic table.

31. The substrate having a hard decorative coating film as claimed in claim 27, wherein the hard decorative coating film is a hard carbon coating film.

32. The substrate having a hard decorative coating film as claimed in claim 31, which has, between the internal hardened layer and the hard decorative coating film, an intermediate layer of a two-layer structure consisting of a lower layer mainly made of chromium or titanium and an upper layer mainly made of silicon or germanium.

33. The substrate having a hard decorative coating film as claimed in claim 31, which has, between the internal hardened layer and the hard decorative coating film, an intermediate layer of a two-layer structure consisting of a lower layer mainly made of titanium and an upper layer mainly made of any one of tungsten, tungsten carbide, silicon carbide and titanium carbide.

34. The substrate having a hard decorative coating film as claimed in any one of claims 27, 30 and 31, wherein the thickness of the hard decorative coating film is in the range of 0.1 to 3.0 μm.

35. The substrate having a hard decorative coating film as claimed in any one of claims 27, 30 and 34, wherein the surface of the hard decorative coating film shows a gold color tone.

36. The substrate having a hard decorative coating film as claimed in claim 35, wherein a coating film comprising gold or a gold alloy is formed on the surface of the hard decorative coating film.

37. The substrate having a hard decorative coating film as claimed in any one of claims 27, 28 and 29, which is a camera

body, a cellular telephone body, a portable radio body, a video camera body, a lighter body or a personal computer main body.

38. A process for producing a substrate having a hard decorative coating film, comprising:

a heating step wherein a substrate comprising titanium or a titanium alloy is placed in a vacuum chamber and annealed,

a hardening treatment step wherein a mixed gas containing nitrogen as a main component and an oxygen component is introduced into the vacuum chamber, and the vacuum chamber is heated at a temperature of 700 to 800°C for a given period of time under given reduced pressure to diffuse nitrogen and oxygen inside the titanium or titanium alloy substrate from the surface so as to form a solid solution,

a cooling step wherein the titanium or titanium alloy substrate is cooled to room temperature,

a polishing step wherein the substrate surface is polished,

a washing step wherein the substrate is washed,

an evacuation step wherein the substrate is set in a vacuum chamber and the vacuum chamber is evacuated,

an ion bombardment step wherein argon is introduced into the vacuum chamber and ionized to ion bombard the substrate surface,

a step wherein an intermediate layer comprising a metal or a metallic carbide is formed on the substrate surface by sputtering,

a step wherein argon is exhausted from the vacuum chamber and a gas containing carbon is introduced into the vacuum chamber, and

a step wherein plasma is generated in the vacuum chamber and a diamond-like carbon coating film is formed on the surface of the intermediate layer by plasma CVD treatment.

39. The process for producing a substrate having a hard decorative coating film as claimed in claim 38, wherein in the step of forming an intermediate layer, argon is introduced into the vacuum chamber and ionized, and any one of silicon, tungsten, titanium carbide, silicon carbide and chromium carbide is targeted to form an intermediate layer mainly made of any one of silicon, tungsten, titanium carbide, silicon carbide and chromium carbide.

40. The process for producing a substrate having a hard decorative coating film as claimed in claim 38, wherein the step of forming an intermediate layer consists of:

a first intermediate layer forming step wherein argon is introduced into the vacuum chamber and ionized, and chromium or titanium is targeted to form a lower layer mainly made of chromium or titanium, and

a second intermediate layer forming step wherein silicon or germanium is targeted to form an upper layer mainly made of silicon or germanium.

41. The process for producing a substrate having a hard decorative coating film as claimed in claim 38, wherein the step of forming an intermediate layer consists of:

a first intermediate layer forming step wherein argon is introduced into the vacuum chamber and ionized, and titanium is targeted to form a lower layer mainly made of titanium, and

a second intermediate layer forming step wherein tungsten is targeted to form an upper layer mainly made of tungsten.

42. The process for producing a substrate having a hard decorative coating film as claimed in claim 38, wherein the step of forming an intermediate layer consists of:

a first intermediate layer forming step wherein argon is introduced into the vacuum chamber and ionized, and titanium is targeted to form a lower layer mainly made of titanium, and

a second intermediate layer forming step wherein a gas containing carbon is introduced into the vacuum chamber, and tungsten or silicon is targeted to form an upper layer mainly made of tungsten carbide or silicon carbide.

43. A process for producing a substrate having a hard decorative coating film, comprising:

a heating step wherein a substrate comprising titanium or a titanium alloy is placed in a vacuum chamber and annealed,

a hardening treatment step wherein a mixed gas containing nitrogen as a main component and an oxygen component is introduced into the vacuum chamber, and the vacuum chamber is heated at a temperature of 700 to 800°C for a given period of time under given reduced pressure to diffuse nitrogen and oxygen inside the titanium or titanium alloy substrate from the surface so as to form a solid solution,

a cooling step wherein the titanium or titanium alloy substrate is cooled to room temperature,

a polishing step wherein the substrate surface is polished,

a washing step wherein the substrate is washed,

an evacuation step wherein the substrate is set in a vacuum chamber and the vacuum chamber is evacuated,

an ion bombardment step wherein argon is introduced into the vacuum chamber and ionized to ion bombard the substrate surface, and

a step wherein a hard decorative coating film comprising a nitride, a carbide, an oxide, a nitrido-carbide or a nitrido-carbido-oxide of a 4a, 5a or 6a Group element of the periodic table is formed on the substrate surface by ion plating or sputtering.

44. The process for producing a substrate having a hard decorative coating film as claimed in claim 43, wherein the step of forming a hard decorative coating film is followed by a step wherein a gold or gold alloy coating film is formed

on the surface of the hard decorative coating film by ion plating or sputtering.

45. Cutlery (metallic Western-style tableware) comprising a working part (cutlery body) and a grip, wherein the grip is provided with a floating means.

46. The cutlery as claimed in claim 45, wherein a hollow part is formed in the grip as the floating means.

47. The cutlery as claimed in claim 46, wherein the hollow part formed in the grip is filled with a member having a specific gravity of less than 1.

48. The cutlery as claimed in claim 47, wherein the member filled in the hollow part formed in the grip is a foamed product.

49. Cutlery (metallic Western-style tableware) comprising a working part (cutlery body) and a grip,

wherein the cutlery body comprises a titanium material,

the grip comprises a thermoplastic resin having a hollow part, and

the working part is an integrally constituted part formed by insert molding using the thermoplastic resin.

50. Cutlery as claimed in any one of claims 45 to 49, which is a spoon, a fork or a knife.